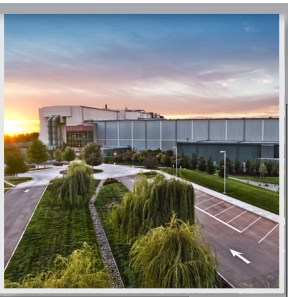

WOMEN OF NIF 2020

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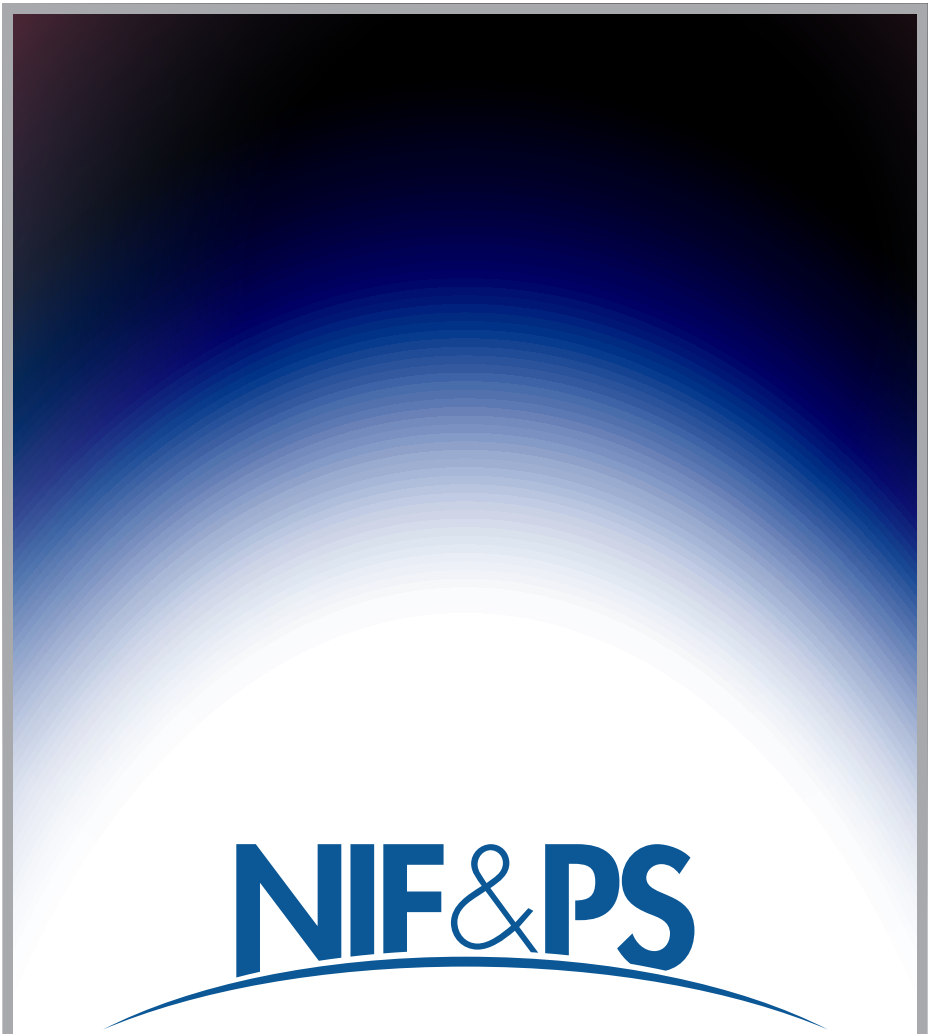

lasers.llnl.gov

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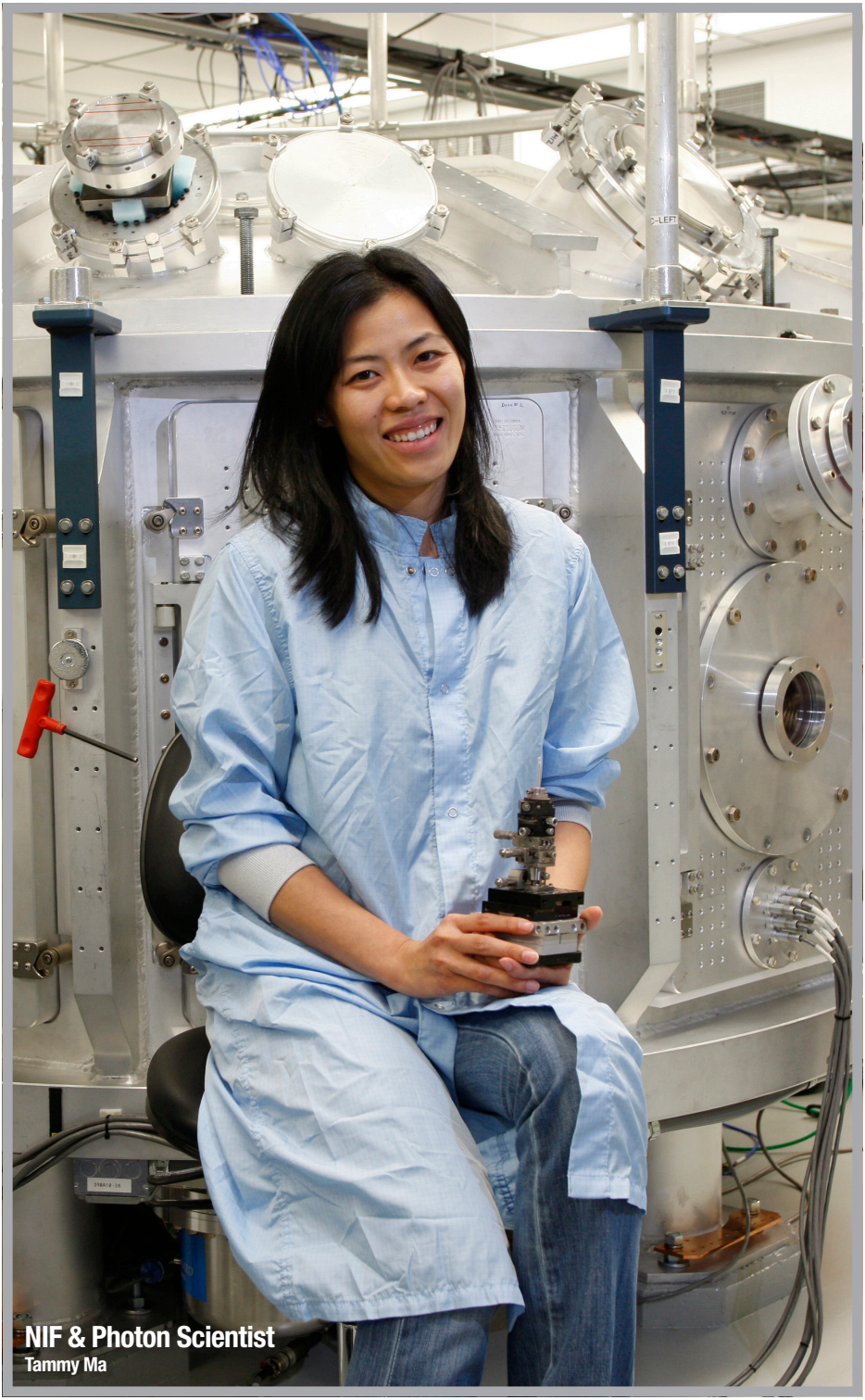
The Talented and Dedicated Women of NIF&PS

Among the missions of the NIF and Photon Science (NIF&PS) Directorate at Lawrence Livermore National Laboratory is operating the National Ignition Facility (NIF), the world's largest and highest-energy laser system. It takes a technical staff with a wide variety of expertise and experience to support operating NIF as a user facility and to develop and carry out a preeminent experimental program in high-energy-density science on NIF. Likewise, it takes a technical staff with a wide variety of expertise and experience to support other activities of the NIF&PS Directorate, where innovation and the development of critical technologies are key to advancing the state of the art in laser science – technical staff such as the women profiled in this brochure.

The skills of the women of NIF&PS range from chemistry (inorganic, organic, physical and nuclear), physics (applied, astro, experimental, nuclear, and plasma), and biology to engineering (aeronautical, chemical, electrical, mechanical, optical, and nuclear), material science, microscale fabrication, applied mathematics, statistics, computer science, information technology, and robotics. Their backgrounds and interests are equally varied. In this brochure, you will meet just a few of the talented and dedicated professional women without whom our success would not be possible. While the brochure focuses on the Directorate's scientists and engineers, the contributions of many other women working at NIF&PS, including technicians, analysts, designers, and administrative personnel, are equally vital to accomplishing our important missions: helping ensure the nation's security and continued scientific leadership, and furthering the pursuit of a clean, safe, and virtually inexhaustible source of energy.



NIF & Photon Scientist
Tammy Ma

Félicie Albert

Deputy Director, LLNL High Energy Density Science Center

Félicie Albert is a scientist in the NIF and Photon Science Directorate, and the deputy director for LLNL's High Energy Density Science Center. She joined LLNL in 2008 as a postdoctoral researcher to work on nuclear resonance experiments and became a permanent member of the technical staff in 2010.

Félicie earned her PhD in physics in 2007 from the Ecole Polytechnique in France, her M.S. in optics from the University of Central Florida, and her B.S. in engineering from the Ecole Nationale Supérieure de Physique de Marseille, France.

Her areas of expertise include the generation and applications of novel sources of electrons, x rays, and gamma rays. She has conducted many experiments using high-intensity lasers.

Among Félicie's honors are the Presidential Early Career Award for Scientists and Engineers; a DOE Early Career Research Program Award; the 2017 American Physical Society (APS) Katherine E. Weimer Award; and the 2017 Edouard Fabre Prize for contributions to laser-plasma research.

She is a member of the International Committee of Ultra Intense Lasers, a senior member of The Optical Society, and an APS Fellow.

Favorites and noteworthy

- Favorite subjects in high school: Physics and sports
- Favorite subjects in college: Optics and plasma physics
- Noteworthy accomplishments: Winner of LLNL's best postdoc publication in 2011, APS Outstanding Referee in 2015, DOE Early Career Research Program Award in 2016, APS Katherine E. Weimer Award in 2017, Edouard Fabre Prize in 2017

Mechanical Engineering

Rebecca Butlin

NIF Target Fabrication Interface Manager

Becky Butlin, a mechanical engineer, is the NIF Target Fabrication Interface manager and Target Engineering Group leader at LLNL. She earned her B.S. degree in mechanical engineering from Cal Poly San Luis Obispo in 2002 and soon after began her career at LLNL. She earned her M.S. degree in mechanical engineering from UC Davis while working at LLNL.

At Cal Poly she received the Academic Achievement Award for graduating at the top of her engineering class. As a natural leader, she often led class projects, Bible studies, and work projects, as well as mentoring and teaching others.

Throughout college and her early career, Becky focused on engineering design and analysis. It wasn't until she was asked to manage an assembly team that she found her affinity for production management and continual process improvements.

Favorites and noteworthy

- Favorite subjects in high school: Art, trigonometry, calculus, and physics
- Favorite subjects in college: Statics, dynamics, and mechanical design
- Noteworthy accomplishments: Successfully leading the assembly team for over 600 large optical assemblies for NIF. Successfully leading the NIF Target Assembly team

Physics

Debra Callahan

Physicist

Dr. Debra Callahan is a physicist and the associate division leader for high energy density (HED) and inertial confinement fusion (ICF) within the Design Physics Division of the Weapons and Complex Integration Directorate at LLNL. She is also the deputy for Integrated Experiments within the ICF program. Debbie received her B.S. degree in physics and mathematics from the University of Denver in 1985. She spent two years at Cornell University before moving to LLNL to finish her PhD at the University of California, Davis, in 1993.

Debbie has spent her career at LLNL working on ICF and inertial fusion energy (IFE). In 2004, she switched from heavy-ion-driven IFE target design to NIF target design. Her specialty is the physics and design of hohlraums for ICFtargets. Her work on understanding hohlraum symmetry is the basis for many of the ICF designs being fielded on NIF today.

She was a co-recipient of the American Physical Society's John Dawson award for Excellence in Plasma Physics Research in 2012 for work done on NIF. She was named a Fellow of the American Physical Society in 2014.

Biochemistry/ Business Administration

Lydia Camara

NIF&PS Deputy Principal Associate Director for Operations

Lydia Camara is the NIF & Photon Science deputy principal associate director for Operations. Directorate Operations provides information technology, facilities management, environment safety and health, training, security, assurance, and project/construction management services to the Directorate. Lydia came to the Laboratory in 2003 and has held positions in the NIF&PS Directorate as the deputy operations manager, assurance manager, and Directorate security officer. She received her B.S. degree in biochemistry from Virginia Tech and her MBA from Saint Mary's College of California.

Favorites and noteworthy

- Favorite subjects in school: Chemistry
- Noteworthy accomplishments: Currently responsible for implementing the enhanced work control system in the NIF&PS Directorate

Computer Science

Cathy Chang

Software Quality Control Engineer

Cathy Chang is a software quality control engineer for the National Ignition Facility at LLNL. She earned her B.S. degree in environmental toxicology from the University of California, Davis (UCD), a B.S. degree in computer science from San Jose State University (SJSU), and her M.S. degree in computer science from California State University, Hayward.

Cathy was born in Hong Kong. Her family immigrated to the United States when she was 7 in hopes of getting her a better education. Knowing very little English in 2nd grade, she could only excel in math. She did not get to attend a regular English class until 7th grade, when she was transferred to a different middle school.

After graduating from UCD, Cathy worked for 4 years as a chemist before deciding to switch careers for health reasons. While studying at SJSU, she worked as an intern at ELetter, Inc. Her quality assurance manager encouraged and mentored her to go into software testing, and she has stayed in that field ever since. She began working at LLNL in July 2004 and continues to test web and standalone applications to this day.

Favorites and noteworthy

- Favorite subjects in high school: Calculus, Home Economics
- Favorite subjects in college: Food Toxicology, Combinatorics
- Noteworthy accomplishments: Fluent in Cantonese and English. Scored 5 in A.P. Calculus. Built a computer. Fixed things around the house. Completed numerous sewing/knitting/crochet projects

Marina Chiarappa-Zucca

Biologist/Chemist

Marina Chiarappa-Zucca is a biologist/chemist for the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her B.A. degree in biology from U.C., Davis, and her MS degree in marine biology from the University of Alabama in Birmingham.

Marina worked at the University of Wisconsin on research in environmental toxicology. She has been at the LLNL for 25 years. Most of her career has been dedicated to doing research using her analytical chemistry and biology skills to solve problems in the areas of environmental remediation and biodefense. At NIF, she applies her expertise to issues related to tritium and beryllium and operates the mass spectrometer that is used to determine the gas composition for ignition laser shots.

Favorites and noteworthy

- Favorite subject in high school: Biology
- Favorite subject in college: Invertebrate zoology
- Noteworthy accomplishments: Teaching Environmental Science and Field Research Techniques at De Anza College as adjunct faculty; Receiving the LLNL Director's Performance Award for providing novel technologies for remediating a superfund site

Computer Science

Raelyn Clark

Computer Scientist

Raelyn Clark is the team lead for the Production Optics Reporting and Tracking (PORT) tool and the database architect for the Optics Inspection (OI) Analysis team, supporting the National Ignition Facility and Photon Science Directorate. She earned a BS in computer science from Duquesne University in Pittsburgh.

Raelyn came to LLNL in 2001 as a member of the formal test Verification and Validation team, responsible for testing software changes and updating requirements specifications. She transitioned to providing data management support for on-going development, test and production activities.

In her current position she is responsible for the full product lifecycle in PORT and OI, including database design, configuration maintenance, release schedule/installation, and data management. She enjoys interacting, brainstorming, and problem-solving with program management, engineers, scientists and developers.

She received an Air Force ROTC college scholarship, and served in the military for eight years. As a member of both U.S. and A.F. Space Commands, she was responsible for planning satellite and space shuttle launches, as well as monitoring satellite positions in space.

Favorites and noteworthy

- Favorite subjects in high school: Accounting and Computers
- Favorite subject in college: Database design
- Noteworthy accomplishments: Proud wife and mother of two boys; Serving in the military; Introducing new methods for organizing data and adding configuration management to the systems she works on

Pascale Di Nicola

NIF Target Fabrication Deputy Production Manager

Pascale Di Nicola is deputy production manager position with the LLNL integrated Target Fabrication organization and co-leader of the Target Fabrication Engineering group.

She was an invited scientist during NIF commissioning in 2008 and was hired by LLNL in 2009. She was the responsible individual for NIF pointing performance for 8 years and ran the Target & Laser Interaction Sphere (TaLIS) expert group from November 2009 to September 2011, building the documentation and tools still currently used in the assessments. She is still an active member of TaLIS. From 2011 to 2016, Pascale supported NIF Operations with activities related to target and beam alignment, including the Advanced radiographic Capability (ARC), improving the process throughout. She joined NIF Target Fabrication in March 2016, leading the Materials Strength effort and implementing several process improvements for materials campaigns.

Pascale earned her M.S degree in solid-state physics and chemical engineering at the Institute of Sciences of Matter and Radiation-National Superior Engineering School in 1995 and a Diploma of Advanced Studies in solid-state physics from Caen University, France.

Favorites and noteworthy

- Favorite subjects in high school: Science, math and foreign languages (German and English)
- Favorite subject in college: Solid state physics

Pamela Divoky

Deputy Program Director for Operations for the DoD Technologies Program in the NIF&PS Directorate

Pamela Divoky is the deputy program director for Operations for the DoD Technologies Program in the NIF&PS Directorate. Her previous roles include Security and Project Integration manger, assurance management, and the management of various construction and demolition projects within the directorate. She earned her engineering degree from California State Polytechnic University and is a certified project management professional.

After graduation, Pamela initially worked as an environmental engineer and manager, then transitioned into facility engineering and construction in various high-tech companies located in the Bay Area as a project manager.

Pamela has developed a real-time application for total metals analysis for a wastewater treatment system at a high-tech wafer fabrication facility and managed construction projects to remove and dismantle unique legacy equipment and structures within the NIF & PS Directorate.

Favorites and noteworthy

- Favorite subjects in high school: Math and Physics
- Favorite subjects in college: Operations Research Planning and Control, Facility Layout and Design
- Noteworthy accomplishments: Developed real-time application for total metals analysis for waste water treatment system. Managed construction projects to remove unique legacy equipment and structures within NIF

Chemical Engineering

Rebecca Dylla Spears

Chemical Engineer

Rebecca Dylla-Spears received a B.S. in chemical engineering and a B.A. in liberal arts from the University of Texas at Austin. As a B.S. engineer, she held research positions at the Clorox Company and LLNL before earning a PhD in chemical engineering at the University of California, Berkeley. Her graduate research involved the use of microfluidic stagnation point flows to trap and stretch single DNA molecules for detection of tagged sequences.

As a chemical engineer at LLNL, Rebecca supports optics projects that enable future laser systems. She currently leads a project on glass 3D printing which could someday be used to make new types of optics. She has also studied growth of cryogenic hydrogen fuel layers in ignition targets for NIF and colloidal particle interactions in solution as they pertain to optical polishing. Early in her career, Rebecca supported efforts to rapidly grow large potassium dihydrogen phosphate crystals for NIF optics.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry, mathematics,and literature
- Favorite subjects in college: Transport phenomena, chemistry, and literature
- Noteworthy accomplishments: NSF Graduate Research Fellowship recipient, mom, seven-time marathon finisher

Statistics

Gayatri Gururangan
Systems Engineer

Gayatri Gururangan is a systems engineer for the NIF & Photon Science Directorate, currently supporting DoD Technologies. She has worked on many challenging projects interacting with a broad range of diverse teams for the last 17 years, building consensus through collaboration in the Directorate. Before joining the Laboratory, Gayatri worked in industry on diverse projects that involved statistical simulation and modeling. She started at LLNL as a reliability availability and maintainability expert to increase NIF's availability for shot operations. She then moved on to lead an expert group that assessed the shots being proposed on NIF for machine safety.

Favorites and noteworthy

- Favorite subjects in high school: mathematics, statistics, physics, and music
- Favorite subject in college: statistics and computer science
- Noteworthy accomplishments: Implemented and improved many processes to manage NIF projects

Denise Hinkel

Group Leader, Plasma Theory

Dr. Denise Hinkel is the group leader for the Plasma Theory group in the Weapons and Complex Integration (WCI) Directorate at LLNL. She received her PhD in physics in 1990 from the University of California, Los Angeles. She began her career at LLNL in 1992 as a postdoctoral physicist in X Division.

Over the years, Denise has been a major contributor to the NIF effort, both as a plasma theoretician and as a target physicist for inertial confinement fusion and high-energy-density (HED) science. In addition to her contributions in these areas, she also has served for several years as the WCI point of contact, managing the directorate's Laboratory Directed Research and Development portfolio.

Denise has been active in student outreach at Princeton and serves as a mentor in the HED Summer Student Program at LLNL. She is an active member of the American Physical Society and was named a fellow in 2007. She was recently elected to the vice-chair position of the Division of Plasma Physics of the American Physical Society.

Plasma Physics

Laura Hopkins
Design Physicist

Dr. Laura Berzak Hopkins is a design physicist with LLNL's Weapons and Complex Integration Directorate and the National Ignition Facility. She is currently the acting Physics Lead and X-ray Lead for the Livermore Nuclear Survivability Program. Previously she was the lead designer for the Inertial Confinement Fusion (ICF) High-Density Carbon (HDC) Integrated Experiments Campaign, which achieved the National Nuclear Security Administration alpha-heating milestone with record NIF neutron yield and stagnation pressures. She has also been the Principal Investigator for a Laboratory Directed Research and Development Exploratory Research (LDRD ER) project, "Development and Qualification of a Single-shock NIF Platform for Activation Studies with a Prompt Source of Fast Neutrons," which developed a novel NIF gaseous radiochemistry diagnostic. Laura's undergraduate degree is in chemistry and physics from Dartmouth College. For her graduate work at Princeton University, she worked on the Lithium Tokamak eXperiment (LTX) at the Princeton Plasma Physics Laboratory, where she developed and fielded the system of magnetic diagnostics and was the chief tokamak operator. After graduating with a PhD in plasma physics, Laura served as a Congressional Fellow in the U.S. House of Representatives and then in the U.S. Senate before joining LLNL.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry, physics, and literature
- Favorite subjects in college: Chemistry, physics, vertebrate zoology, and Egyptian art history
- Noteworthy accomplishments: NNSA Stewardship Science Graduate Fellow; APS mini-grant for Public Outreach recipient; Assistant Editor for APS Forum on Physics and Society newsletter

Laura Kegelmeyer

Lead, NIF Optics Inspection Analysis

Laura Kegelmeyer is the founder and team lead of NIF Optics Inspection Analysis. She earned her bachelor's degree in biomedical engineering and master's degree in electrical engineering from Boston University.

Laura first came to LLNL to study the physics of cells. During her dozen years with LLNL's biomedical sciences program, she researched topics such as genetic abnormalities and DNA probe mapping. She led an early effort to detect warning signs of breast cancer in digitized mammograms. This expertise in biomedical image analysis brought her to NIF in 2000 to locate damage on the NIF optics. Her automated inspection effort, which allows optics to be repaired and re-used after being damaged by NIF's intense laser light, has extended its scope to include evaluating target capsules and laser wavefront spots.

Laura enjoys synergistic teamwork and brainstorming. From her master's project to her 31 years at the Laboratory, she has worked with a number of teams and especially enjoys bringing experts from different specialties together to achieve amazing results.

Favorites and noteworthy

- Favorite subjects in high school: Qualitative analytical chemistry
- Favorite subjects in college: Electric Circuit Theory, Biomedical Engineering Senior Project (develop respiratory-impedance measuring device).
- Noteworthy accomplishments: Fundamental groundwork in computer-aided digital mammography. Automated optics inspection analysis for the high power NIF laser

Nuclear Engineering

Jessica Krueger

Asset Manager, NIF Optics Engineering & Maintenance Group

Jessica Krueger joined LLNL in 2019 as the asset manager for the NIF Optics Engineering & Maintenance Group, where she is responsible for performing engineering risk analysis of production equipment, implementing preventive maintenance plans, and managing equipment-level and facility-level upgrade projects. Prior to coming to the Laboratory, Jessica earned her degree in nuclear engineering at Oregon State University and served 6 years in the Navy in various positions including engineering officer of the watch onboard a nuclear-powered aircraft carrier and maintenance manager for reactor plant systems. She is currently pursuing her master's degree in management science and engineering from Stanford University. Her favorite subjects were math, English, and music (choir).

Tanza Lewis

NIF Alignment Process Lead

Dr. Tanza Lewis is the NIF Alignment Process lead. In this role she is responsible for managing the technical performance of alignment processes used for diagnostic alignment, target alignment, laser alignment, and optics inspection on NIF.

Tanza earned a bachelor's degree in chemistry and a PhD in physical chemistry from the University of California, Irvine. Before completing her PhD she earned the Nottingham Prize Award for her work in surface science.

She began working at LLNL in 2011 as part of the NIF Cryogenic Layering Team, where she was responsible for studying and performing the growth of deuterium-tritium ice layers inside ignition targets. In 2013 she became a NIF shot director, responsible for the safe and efficient execution of scientific and facility experiments on NIF.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry and physics
- Noteworthy accomplishments: NIF Operations Leadership Program 2012; Nottingham Prize Award Winner 2011; American Chemical Society Analytical Chemistry Award 2007
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Emily Link

Experimental Physicist

Dr. Emily Sistrunk Link is an experimental physicist for the NIF and Photon Science Directorate's Advanced Photon Technologies (APT) Program at LLNL. She earned her bachelor's degree from the University of California, Santa Barbara, in 2005, and her master's and Ph.D. degrees from The Ohio State University in 2008 and 2011. Her doctoral work focused on high harmonic generation, attosecond physics, and ultrafast electron dynamics driven by mid-infrared lasers. As a postdoc at the SLAC National Accelerator Laboratory, she built a high-harmonic beamline for time-resolved extreme ultraviolet spectroscopy and participated in x-ray spectroscopy experiments at SLAC's Linac Coherent Light Source.

In 2014 Emily was hired as a post-doctoral researcher at LLNL to develop a new, efficient method of laser pulse compression. After conversion to staff she was part of the short-pulse team for the High-repetition-rate Advanced Petawatt Laser System, now installed at the Extreme Light Infrastructure Beamlines facility in the Czech Republic. Her current work for the APT program includes next-generation laser science and technology for high-average-power, short-pulse laser systems. In this role, she leads R&D efforts to scale petawatt laser technology to kilowatts of average power to enable future applications, and she manages APT's laboratories.

Aerospace Engineering

Tammy Ma

Physicist

Dr. Tammy Ma leads the High-Intensity Laser High Energy Density (HED) Science Element in the Advanced Photon Technologies (APT) Program within the NIF & Photon Science Directorate. This group pioneers use of the highest-intensity lasers in the world to investigate novel states of matter, generate energetic beams of particles, study laboratory astrophysics, and explore fusion physics.

Tammy earned her B.S. degree in aerospace engineering from Caltech, and her M.S. and PhD degrees from the University of California, San Diego. Since joining LLNL, she has led many inertial confinement fusion experiments on NIF, developed new x-ray diagnostics, and chaired a program for the Lab funding highly innovative research.

Tammy currently serves as a member of the Fusion Energy Sciences Advisory Committee (FESAC) providing advice to the U.S. Department of Energy's Office of Science on complex scientific and technological issues related to fusion energy and plasma research. She is also strongly dedicated to education and scientific outreach.

Favorites and noteworthy

- Favorite subjects in high school: physics, biology, and American history
- Favorite subjects in college: spacecraft systems and plasma physics
- Noteworthy accomplishments: 2016 Presidential Early Career Award for Scientists and Engineers (PECASE), 2018 DOE Early Career Award in 2018, 2019 CA 16th Assembly District Woman of the Year

Anastacia Manuel

Optical Engineer

Stacie Manuel is a member of LLNL's Optical Design and Engineering group, primarily designing optical target diagnostic systems. She joined NIF in 2002 after graduating from Cornell University with bachelor's and master's degrees in engineering physics. After a couple of years at NIF, she entered the PhD program at the College of Optical Sciences at the University of Arizona. She returned to LLNL each summer to work on the Large Synoptic Survey Telescope (LSST). After receiving her PhD, she returned to NIF in 2009.

Outside of work, Stacie enjoys spending time with her family and playing the flute and piccolo in the Livermore Amador Symphony and Hayward Municipal Band.

Favorites and noteworthy

- Favorite subjects in high school: Math, science and band
- Favorite subject in college: Optics

Kathleen McCandless

Computer Scientist

Kathleen McCandless is a computer scientist supporting the National Ignition Facility at LLNL. She received her B.A. degree in physics from Scripps College and earned the top senior thesis award for the physical sciences. While at Scripps, Kathleen also interned at the SLAC National Accelerator Laboratory.

She joined LLNL In 1998, working for the Weapons and Complex Integration Directorate. She then returned to school and earned her master's degree in computer science from Stanford University in 2005 while working full-time. She joined NIF in 2007, where she works with a multi-disciplinary team of scientists and continues to explore physics concepts. Currently she is the Virtual Beamline software engineering manager and is helping to bring massively parallel simulation capabilities, utilizing the latest GPU-based supercomputers, to model short-pulse laser systems and enable a new regime of laser modeling capabilities at LLNL.

Favorites and noteworthy

- Favorite subjects in high school: Calculus and Anatomy
- Favorite subjects in college: Computational Physics and Anthropology
- Noteworthy accomplishments: Earning Masters while working full-time and becoming a mother. Improving performance of the Virtual Beam Line (VBL) code and helping Laser Operations Performance Model (LPOM) group streamline their modeling capabilities

Physics

Sabrina Nagel

Scientist

Dr. Sabrina Nagel, a scientist and group leader at LLNL, is the physics lead of the NIF Dynamic X-ray Detector Group. She works closely with engineering and operations and also regularly runs NIF shots for inertial confinement fusion and high energy density science campaigns.

Sabrina began studying physics at the Julius-Maximillians-University in Wuerzburg, Germany. During her third year she was awarded a fellowship to continue her studies at the University of Texas at Austin, where she received her M.A. in physics. In 2009, she earned her PhD from Imperial College London, where she studied short-pulse, high-intensity laser plasma interactions.

Sabrina joined LLNL in 2011 as a postdoctoral researcher and was converted to staff scientist in 2013. She has been working on x-ray detectors for NIF that can take images of implosions with unprecedented temporal resolution. She became a group leader in the Physics Division in 2018. As part of her job she also regularly attends international conferences, where she gives talks and represents the Laboratory.

Favorites and noteworthy

- Favorite subjects in high school: Math, English (as a foreign language), biology
- Favorite subject in college: Physics
- Noteworthy accomplishments: Received NIF&PS Award – *Outstanding support of DIXI characterization using Comet laser*

Raluca Negres

Staff scientist in OMST group (Optical Materials Science & Technology)

Raluca Negres is a staff scientist in the Optical Materials, Science & Technology Group within the NIF&PS Directorate. Since joining LLNL in 2004 as a postdoctoral researcher, she has conducted research in laser-matter interactions and optical material characterization for high-power laser applications. Raluca has provided technical leadership and made contributions to program efforts as the principal investigator on projects related to optics damage performance for the NIF and Advanced Radiographic Capability (ARC) laser systems. She received her PhD in optical physics from the School of Optics/CREOL at the University of Central Florida and her B.Sc. in physics from the University of Bucharest, Romania. Raluca is a member of the Optical Society of America and is currently serving in the Program Committee for the SPIE Laser Damage Symposium, organizing the annual Thin Film Laser Damage Competition.

Favorites and noteworthy

- Favorite subjects in high school: math, physics, foreign languages (English, French, Latin)
- Noteworthy accomplishments: becoming a mother

Hye-Sook Park

Experimental Physicist

Dr. Hye-Sook Park is an experimental physicist performing science experiments on NIF and many other laser facilities. She received her M.S. and PhD degrees in physics from the University of Michigan. Her thesis experiment was on measuring proton lifetime that is now known to be longer than 1034 years (much longer than the age of universe, which is about 1010 years). Her experiment also detected extraterrestrial neutrino detection from the supernova 1987A explosion. Before joining NIF she worked on the Wide-Field-of-View telescope project for the Strategic Defense Initiative, the CLEMENTINE lunar-mapping mission, and the 800MeV proton radiography project as well as an astrophysics project searching for optical counterparts to gamma-ray bursts using automated triggered telescope systems.

At NIF, Hye-Sook developed a greater-than-15-keV, high-energy backlighter using short-pulse, high-intensity lasers with micro-flag- and micro-wire-style targets; this technique is now used for many experiments. She is now involved in developing a new class of high energy density science research on NIF, involving studies of high-atomic-number materials including plutonium under high pressure; astrophysical collisionless shock experiments; magnetic reconnection experiments; and the study of iron and iron-nickel alloys at Earth-core pressure and temperature conditions.

Favorites and noteworthy

- Noteworthy accomplishment: Dr. Park was named an American Physical Society fellow in 2010

Plasma Physics PhD Physics Msci

Louisa Pickworth

Staff Scientist

Dr. Louisa Pickworth is a staff scientist working on X-ray Diagnostics & Measurements for the National Ignition Facility. NIF needs the best x-ray microscopes to peer inside its fusion experiments; Louisa works with the scientists and engineers to design and deliver these cutting-edge instruments to the facility. She earned her undergraduate degree in physics at Imperial College London, England, in 2008. She stayed on at Imperial to earn her PhD in plasma physics, working with the MAGPIE Z-pinch facility, a pulsed-power device that can create short-lived plasmas. Her thesis work focused on laboratory astrophysics experiments involving strong shocks produced by supersonic plasma jets. She joined LLNL as a postdoc in May 2013 and became a staff scientist in 2015. Louisa has worked on a number of experimental projects to study the mechanisms involved in fusion implosions using the x-ray microscopes she designed and the other state-of-the-artinstruments available at NIF.

Favorites and noteworthy

- Favorite subjects in school: Science, Art and History

Optical Engineering

Shahida Rana

Optical/Laser Scientist

Shahida Rana has been an Optical/Laser Scientist for NIF Directorate since 2001. She has 24 years of technical, industrial experience in optical engineering, project management, and quality assurance at NIF, Hewlett Packard Lab, Agilent Lab and Kaiser Electronics. She earned her MS in Optical Engineering/Optics and BS in Chemistry/Physics from the University of Arizona.

For most of her career at NIF, she has designed several NIF Diagnostic Optics such as SIDE Damage Inspection System, Input/Output Sensor Optics, and Target Alignment Calibration System. She has performed optical analysis/procurement of FODI, modeling/simulation of NIF Final Optics including stray light analysis. Participated and managed Management Readiness Assessment activities with NIF Readiness Assessment Manager.

Before coming to NIF, she has participated in US Navy, Army and DARPA sponsored research projects in a managerial/optics expert role. She has designed Reflective/Refractive Heads Up Displays for commercial and Navy/Military aircrafts (Boeing 747, F18, F16, and F14). She was technical advisor for Optics Design/Optical Coating, Optics Manufacturing, and Supplier Certification & Evaluation for many international Hewlett Packard divisions (Heptagon, Finland, Ipswich Components Operations, England, and Singapore) and Kaiser Electronic.

Favorites and noteworthy

- Favorite subjects in high school: Math, Science, Leadership
- Favorite subject in college: Optical Engineering, Modeling/ Simulation, Computer Programming
- Noteworthy accomplishments: Recipient of 10 U.S. Patents in Optical System Designs; Six Sigma Yellow Belt; NQA-1 and ISO 9001 Certified, Developed Record Management System tool for all research projects

Chemistry/Material Science

Kathleen Schaffers

Chemist

Dr. Kathleen Schaffers is a chemist for the NIF and Photon Science Directorate at LLNL. She earned her PhD in inorganic chemistry/materials science from Oregon State University, looking for and characterizing new laser materials that had not yet been discovered.

After receiving her doctorate she performed 1-1/2 years of postdoctoral work at Stanford University, where she concentrated on the growth of laser crystals. During this time she was called by a colleague at LLNL for an interview in the area of crystal growth of new laser materials. She has been at LLNL for 26 years.

Kathleen is a NIF materials science expert. Her main focus is the research and fabrication of unique glasses and crystals for NIF and other advanced lasers being built at LLNL. This effort includes working on new designs of lasers and materials that will stretch the current capabilities available to laser research. In addition, she supports the needs of NIF, which entail providing frequency conversion crystals, working on optics to absorb backscattered light, and performing projects that enhance NIF's capabilities. This type of cutting-edge research and participation in NIF's missions are a main focus of her interest in working to develop materials that will take the world a step closer to fusion energy and projects that require new laser technology to explore research that is not currently possible.

Favorites and noteworthy

- Favorite subject in high school: Chemistry and Biology
- Favorite subjects in college: Materials science and Chemistry
- Noteworthy accomplishment: World's expert in the growth of Yb:S-FAP [Yb3+:Sr5(PO4)3F] laser crystals

Marilyn Schneider

Experimental Physicist

Dr. Marilyn Schneider is the group leader of the Radiative Properties Group in the Physics Division of the Physical and Life Sciences Directorate at LLNL. She received her A.B. degree from Barnard College (Columbia University) with a major in physics and her PhD in physics from Cornell University in 1983. She was named a Fellow of the American Physical Society, Topical Group on Instrument and Measurement Science, in 2013. She became a Distinguished Member of the Technical Staff at LLNL in 2019.

As a postdoctoral candidate and research associate at Cornell University, Marilyn studied the fluctuations of the interface between two fluids near their critical point. She joined LLNL in 1986. At the Laboratory she has worked on commissioning soft x-ray-ultraviolet and vacuum ultraviolet beamlines at the Stanford Synchrotron Radiation Lightsource. She studied interface instabilities at LLNL's Nova laser and used the LLNL Linear Electric Motor facility to study Rayleigh-Taylor instabilities between two fluids. Marilyn led the Beam-Pointing Working Group during NIF commissioning.

Currently she and her group are developing new x-ray spectrometers to study high-density warm and hot plasmas. They are developing tools to determine plasma conditions and study radiative transport in these plasmas and they are doing benchmark experiments to understand the complex, high-atomic-number, non-local thermodynamic equilibrium plasmas that are ubiquitous in laser-produced plasmas.

Favorites and noteworthy

- Favorite subject in high school: Geometry
- Favorite subject in college: Quantum Mechanics
- Noteworthy Accomplishments: When my 3 daughters were in elementary school, I co-ran a program to teach students about famous multicultural artists and composers

Computer Science

Marianne Shaieb

Computer Scientist

Marianne Shaieb is a computer scientist for the National Ignition Facility at Lawrence Livermore National Laboratory (LLNL.) She earned her BS from California State University, Chico.

After graduating from college, Marianne joined LLNL supporting the parts database for the Advanced Laser Isotope Separation (AVLIS) project. She then worked in several roles as team lead and project lead on the EPD Hazardous Waste Tracking System and on the Nuclear Chemistry team developing a Laboratory Information Management System (LIMS) for the tracking and analysis of hazardous and radiological analytical samples. Marianne joined NIF in 2006, working on the Integrated Computer Control System (ICCS) Database Team. She supports the configuration and archive databases and the ConfigEdit interface. She is currently the ICCS Database Schema Design Lead.

Favorites and noteworthy

- Favorite subjects in high school: Math, science, and leadership
- Favorite subjects in college: Computer Programming, database design, systems analysis & design
- Noteworthy accomplishments: Developed Chemistry's Sample Tracking, Analysis and Reporting System; Leading both projects and teams; Migrating ICCS ConfigEdit application to newer web-based technology

Dawn Shaughnessy

Nuclear and Chemical Sciences Division Leader

Dr. Dawn Shaughnessy is group leader of the Nuclear and Radiochemistry Group in the Nuclear and Chemical Sciences Division at LLNL. She is also the campaign lead for the High Energy Density (HED) Radiochemistry program, which investigates the effects of plasmas on nuclear reactions for the Laboratory's Stockpile Stewardship and Nuclear Forensic Programs. Dawn is part of a collaboration with the University of Notre Dame to investigate nuclear reactions at NIF relevant to stellar astrophysics.

Dawn received her B.S. degree in chemistry in 1993 and a PhD in nuclear chemistry from the University of California, Berkeley, in 2000. After completing a postdoctoral appointment at Lawrence Berkeley National Laboratory, she arrived at LLNL in 2002 as a staff chemist.

Her honors include: induction into the Alameda County Women's Hall of Fame; the Gordon Battelle Prize for the Discovery of Element 117; the LLNL Early and Mid-Career Recognition Program; the Director's S&T Award for Radiochemistry at NIF; the DOE Mentor Award; and the NNSA/Defense Programs Award of Excellence. She is a Fellow of the American Chemical Society and was Number 9 in the "100 Most Creative People in Business" list from Fast Company Magazine.

Nuclear Physics

Mary Spaeth
Scientist

Mary Spaeth is a visiting scientist for the NIF & Photon Science Directorate at LLNL. She earned her M.S. degree in nuclear physics at Wayne State University in 1962.

Mary began her career as a physicist at Hughes Aircraft Company, where she developed the first brassboard laser range finder and invented tunable dye lasers. From 1975 to 1990 she was a physicist and manager/program leader of LLNL's Atomic Vapor Laser Isotope Separation (AVLIS) program, in charge of laser system development and systems engineering for an AVLIS production plant prototype.

Mary has 20 years of experience in NIF, having served as the lead systems engineer, the chief technical officer, and now as a visiting scientist. After inventing the concepts for the Optics Recycle Loop, which recycles damaged optics for reuse on NIF, Mary had a lead role in developing the hardware and subsystems needed for implementing the Loop into regular NIF operations. Spanning her career, she has 59 years of experience in the design, technical integration, and fabrication of large laser systems.

Graphic Design

Pamela Spears
Document Services
Group Leader

Pam Spears, a Group Leader with LLNL's Technical Information Department (TID), thrives on helping make the exciting research carried out by the Laboratory come alive for employees, other scientists, and the public. She leads the NIF & Photon Science Directorate Document Services team, a multidisciplinary group of designers, illustrators, writer/editors, animators, photographers, videographers, and web developers. The team supports the Directorate's strategic communications efforts by producing visually appealing and readable materials, including annual reports, newsletters, posters, brochures, displays, conference packages, and presentations for use at conferences, visitor lobbies, recruiting booths, and other venues.

Pam came to the Laboratory in 1989. She worked first in TID with a broad base of clients, then moved to the Engineering Directorate as the lead of the Engineering Art and Edit Team. She transferred to NIF&PS in 2001.

She received her BFA in Design from Howard University and worked at Labat-Anderson (a consulting firm), the FBI, and the Educational Testing Service before moving to California to join LLNL.

Pam enjoys the broad range of projects and the access to new technology. "I have been able to utilize the latest technology to deliver creative solutions to my clients," she says. *Working at the Lab has always been both challenging and fulfilling.*

Favorites and noteworthy

- Member of Delta Sigma Theta Sorority, Inc., a non-profit organization that promotes academic excellence and provides assistance to those in need through established programs.
- In her time away from the Lab, Pam likes to cook, garden, weld, hunt, and connect with friends and family

Optical Engineering

Rebecca Swertfeger

Diode Laser Engineer

Rebecca Swertfeger is a diode laser engineer in the NIF & Photon Science Directorate at LLNL. Rebecca received her bachelor's degree in optical engineering with a minor in material science and solid-state physics at Rose-Hulman Institute of Technology in 2018. As an undergraduate Rebecca conducted NASA-funded research with diode lasers for free-space communications and worked with the Jet Propulsion Lab on a spectrometer for the Mars 2020 rover.

After graduating she joined LLNL's diode laser team and now specializes in high-power diode laser applications for various projects within the NIF & PS directorate. She is also a member of the Women's Executive Council and the Lawrence Livermore Employee Services Association Rock Climbing Networking Group.

Favorites and noteworthy

- Favorite Subjects in High School: Physics and Chemistry

Computer Science

Suzanna Townsend

Computer Scientist

Suzy Townsend, a computer scientist, has been supporting NIF since June 2000. Suzy joined LLNL after graduating from California State University Stanislaus with a B.S. degree in computer science, a B.A. in mathematics. and a minor in chemistry.

As an employee of LLNL's Computation Directorate, Suzy has supported several research areas including Hazardous Waste Management, Joint Conflict and Tactical Simulation, and NIF's Integrated Computer Control System (ICCS). While at NIF she has worked as an individual contributor, a database team lead, and in her current assignment as NIF & PS Control Systems Software Standards and Quality manager.

Her career has included multiple administrative group lead positions, NIF Computing deputy division lead, and programmatic team and group lead positions.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry, physiology, and math
- Favorite subjects in college: Zoology, organic chemistry, math
- Noteworthy accomplishments: R&D 500 Award (contributions to the Automatic Alignment System for NIF's ICCS), Laboratory Science & Technology Award (contributions to Experiment Automation System for NIF)

Diana VanBlarcom

Chemical Engineering

Diana is a chemical engineer supporting the Optics Processing Facility at the NIF. She earned her bachelor's degree in Chemical Engineering from the Ohio State University in 2006. While an undergraduate at Ohio State, Diana worked as a co-op engineer at DuPont in Parkersburg, WV. She supported production of Teflon® copolymers: FEP and PFA.

Diana earned her PhD in Chemical Engineering from the University of Texas at Austin in 2010. Her research involved incorporating pH-responsive hydrogels with silicon substrates toward microsensing applications. While a graduate student, Diana was a visiting scientist at Tokyo Women's Medical University in Tokyo, Japan, and the University of New South Wales in Sydney, Australia.

Diana joined LLNL in 2010. She is a process engineer for the cleaning and anti-reflective coating of optics as part of the NIF "recycle" loop. Diana also supports research activities towards higher damage resistance of NIF final optics.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry and math
- Favorite subject in college: Physical Chemistry
- Noteworthy accomplishments: High School Valedictorian; National Science Foundation Graduate Research Fellowship recipient

Lana Wong

Materials Scientist

Lana Wong is a materials scientist supporting the NIF optics program. She divides her time between production and research responsibilities as the component engineer for both the disposable debris shield and fused silica debris shield optics, and support for science & technology efforts related to NIF optics. She earned her bachelor's degree in ceramic engineering and her master's degree in materials science & engineering from the University of Washington.

Lana enjoyed math and sciences in high school, which naturally led her to study engineering in college. A space-shuttle tile demonstration highlighting fast heat dissipation at a science fair lured her into the field of ceramic engineering.

Lana worked in the refractories industry right after college. Over 14 years, she developed new formulations and technologies for refractory castables, plastics, and mortars. Lana arrived at LLNL in 2002 to support the Yucca Mountain nuclear waste disposal project. She developed much-needed cleaning protocols for Long Term Corrosion Test Facility coupons (samples) exposed to various groundwaters. Since 2004 Lana has provided technical support for NIF in the areas of finishing (mitigating sub-surface damage), including slurry stabilization to prevent particle agglomeration during polishing, as well as etching and mitigation strategies to reduce or eliminate laser-induced damage on NIF optics by improving their surface quality.

Favorites and noteworthy

- Favorite subjects in high school: Biology, Calculus
- Favorite subject in college: Mechanical Properties of Materials
- Noteworthy accomplishments: Helped improve the damage threshold of fused silica optics for NIF; produced a set of corrosion data used to predict the lifetime of Yucca Mountain nuclear waste containers

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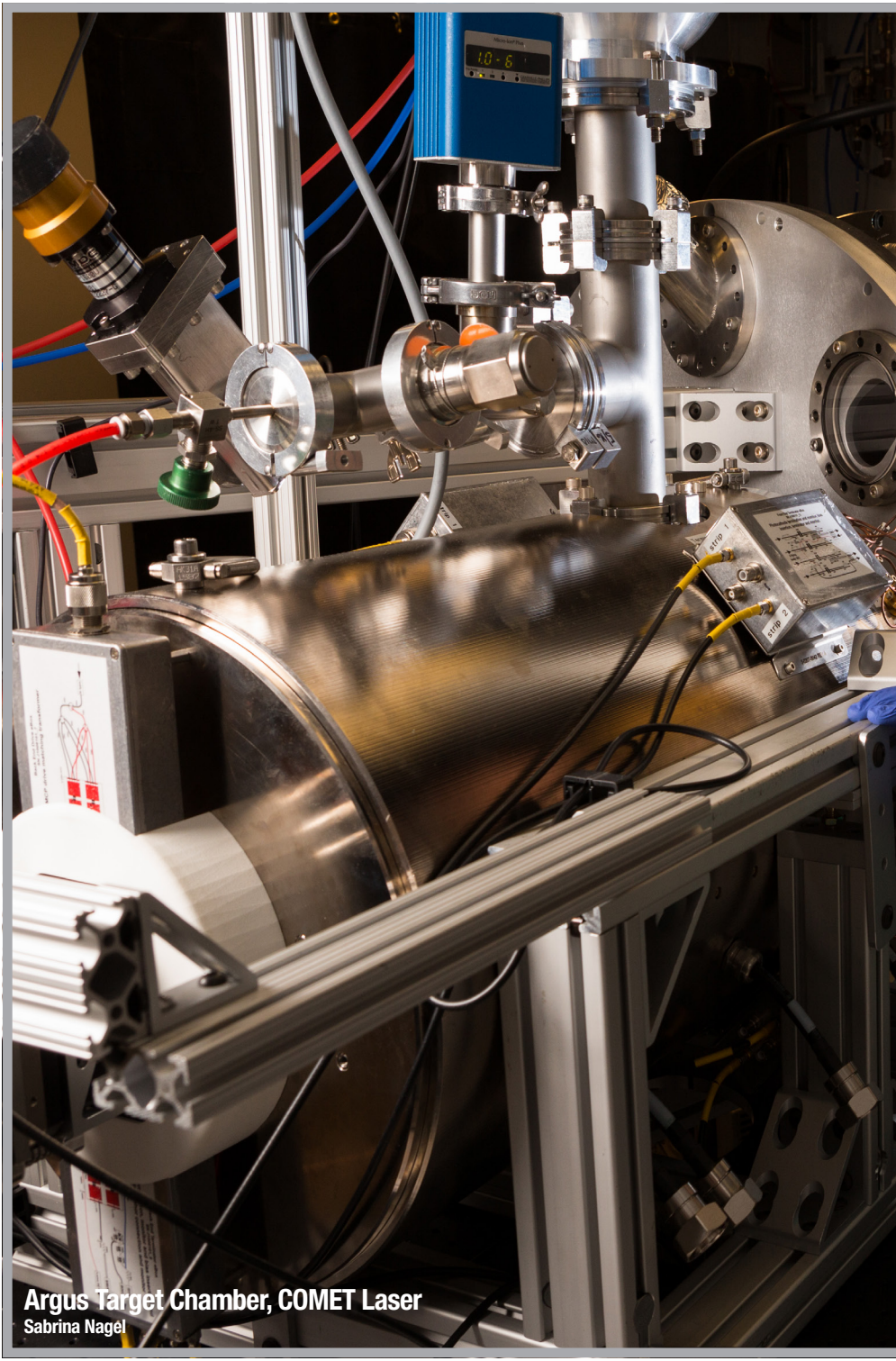

Argus Target Chamber, COMET Laser
Sabrina Nagel

NIF&PS

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